MODIS SCIENCE TEAM MEMBER
Quarterly Report (January - April 1994)

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a) Task Objectives

The objectives of this phase of the project were: to continue the research program developing the 'at-launch' algorithms for MODIS atmospheric correction, vegetation indices, fire detection and land cover and to build the infrastructure and collaboration to permit the research to be undertaken. The project has developed a number of collaborative projects which are intended to expand the scope of the team members activities and involve a larger community in the MODIS research. Due to the small number of researchers addressing the issues necessary for the methodological advances needed for MODIS, emphasis has been given to developing international collaborative research through the IGBP Data and Information System Core Project. In addition, the goals of the MODIS project, the status of the instrument and preliminary results of the research were presented at key scientific meetings. The project was also represented at the MODIS Team meeting. Results of the studies undertaken as part of the project are in the process of being written up and submitted for publication.

b) Tasks Accomplished (Data analysis and interpretation).

Specifically the project has addressed the following topics over the last four months:

MODIS atmospheric correction:

Development of the 6S code: Version 3.1 is now ready for delivery. The code has been analyzed using a Fortran analyzer available on a Cray Computer (charney) and has been checked for portability on various Unix platforms. Version 3.1 is therefore three time faster than Version 3.0. A manual has been written for 6S (177 pages), and a postscript version of this manual is available by anonymous ftp (kratmos.gsfc.nasa.gov). An X-windows interface for 6S has been developed in collaboration with Louis Gonzalez from Lille (LOA).

MODIS Airborne Simulator: Absolute calibration and intercalibration methods have been developed for the MAS SCAR-A data sets to overcome the calibrated data delivery problems at MCST. For example the calibrated data are not yet available. The concept of this calibration is to apply the method developed for the AVHRR by Vermote and Kaufman, 1994 ie. absolute calibration from Rayleigh scattering and intercalibration using clouds and sunglint.
Several meetings have been held to define the MAS configuration during the BOREAS experiment and to prepare for the SCAR-C experiment (September 1994).

Sunphotometer Network Atmospheric Correction Validation: A proposal to NASA on LTER Atmospheric Correction was completed. This proposal will augment the MODIS pre-launch R&D activity and will exercice the operational atmospheric correction method on AVHRR and TM data using LTER located sun-photometer

data as the validation. It is linked to the MODIS test site concept and a proposal using the corrected data for FPAR analysis is being written by Running and al.

•MODIS Land Cover

- Dr Justice attended the IGBP Working Group Meeting on Land Cover at Las Vegas and presented material on the MODIS Land Cover Test Site initiative and on Land Cover Validation options.

•MODIS Fire Detection

- The first AVHRR global fire product was generated by SDST using the first ten days of the IGBP AVHRR Global 1km data from the LP DAAC and the algorithm developed for use with the AVHRR. This algorithm is a precursor to the Modland Fire Algorithm. The product is being evaluated.

• MODIS Vegetation Index

- A proposal was developed and submitted to EOSDIS to provide the capacity for SeaWifs product generation. This product will permit the testing of the MNDVI being proposed for MODIS.

c) Data / Analysis / Interpretation

Continued analysis of AVHRR, MAS and Landsat data was performed as part of the MODLAND prototyping effort.

Meetings Attended.
- Val d'Isere Spectral Signatures Meeting (Jan uary)
- Modland BRDF- VI- Atmospheric Correction Interactions Meeting (January).
- LP DAAC Visit to discuss Global 1km data release (February)
- IGBP Land Cover Working Group Meeting (February).
- Scar C Planning Meeting (February).
- Landsat Pathfinder Test Global Land Cover Test Site Meeting (March)
- Pathfinder Interuse Meeting (March).

d) Anticipated Future Actions.

Research:

Review ATBD Panel comments and respond.
Continued AVHRR Fire algorithm study. Assess Global Fire prototype.
Continued AVHRR Land Cover study.
Continued MODIS Airborne Simulator (MAS) analysis - planning for California SCAR.
New hire for Fire Algorithm Support.

Upcoming Meetings:

Hardware Purchase

• No new equipment purchased

e) Problems/Corrective Actions

Nothing to report

f) New Papers

Submitted :

Vermote, E. F., El Saleous, N. Z., Kaufman, Y. J. and Dutton, E., 1994, Stratospheric aerosol perturbing effect on the remote sensing of vegetation: Correction method for the composite NDVI after the Pinatubo eruption.
Submitted in March to special issue of RSE

Roger, J. C. and Vermote, E. F., 1994, Computation and use of the reflectivity at 3.75mm from AVHRR channels.
Submitted in March to special issue of RSE

E. Vermote and Y.J. Kaufman, 1994: 'Absolute calibration of AVHRR visible and near infrared channels using ocean and cloud views'. submitted in Feb. to Int. J. Rem. Sens.